UNITARY GROUP APPROACH FOR EFFECTIVE POTENTIALS IN 2D SYSTEMS: APPLICATION TO CARBON SUBOXIDE C_3O_2

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A $U(3)$ algebraic approach is proposed to describe 2D systems for effective potentials. Our approach is based on the 2D vibron model where the addition of a scalar boson is introduced into the 2D harmonic oscillator space. As a crucial ingredient of our approach an algebraic realization of the coordinates and momenta is obtained. This feature provides the tools to obtain the algebraic representation of a 2D Hamiltonian in terms of similitude transformation of a diagonal matrix. As an application of our approach the rotation-bending energy levels of carbon suboxide C_3O_2 are described in good agreement with experimental data [1].

[1] M. Rodriguez-Arcos, R. Lemus, *Chem. Phys. Lett.*, **713** (2018) 266–271